CURRENT HISTORY

December 2000

"Resource issues will likely affect world affairs significantly in the years ahead. This impact may not always take the form of discord and conflict, but will certainly demand growing attention from policymakers. Whether in the economic, environmental, or political-military area, resource concerns are certain to rise on the international policy agenda."

Resource Competition and World Politics in the Twenty-First Century

MICHAEL T. KLARE

Competition and conflict over access to major sources of valuable and essential materials—water, land, gold, gems, spices, and timber—have long been a significant feature of international affairs. The initial outward burst of European exploration in the fifteenth and sixteenth centuries was largely driven by the quest for precious resources, as was the period of colonization that followed. The onset of industrialization in the nineteenth century sparked another worldwide race for vital materials, culminating in the global pursuit of petroleum. Only with the outbreak of the cold war at the end of World War II did resource issues lose their preeminent role as the strategic and ideological concerns of the superpowers occupying center stage. Now, with the cold war over and a new era beginning, resource competition will again play a critical role in world affairs.

The growing impact of resource politics was particularly evident in 2000. In March, the UN Security Council revealed that the world's major diamond firms were marketing gems acquired from rebel forces in Angola in violation of a UN embargo, sparking protests in Europe and resulting in the adoption of new international restrictions on the sale of so-called conflict diamonds. Then, in April, landless supporters of President Robert Mugabe of Zimbabwe occupied hundreds of white-owned farms and demanded the immediate redistribution of land, igniting a political crisis that has yet to subside. And in September a worldwide shortage of petroleum and the accompanying surge in prices ignited strikes throughout Europe and prompted the release of 30 million gallons of oil from America's Strategic Petroleum Reserve.

The current shortage of oil and conflicts over arable land do not signify that the world is running out of vital resources, as suggested by some. Most basic materials—water, energy, minerals, timber, and food—are sufficiently plentiful to meet human needs for at least the next few decades. But the consumption of some resources is expanding faster than the earth can replenish them, while the price of certain commodities is rising beyond the means of hundreds of millions of people. The lure of instant wealth is also prompting some greedy entrepreneurs—timber cutters in Brazil and Indonesia, ivory hunters in Africa, commercial fishers in Europe and Asia—to plunder habitats that may never recover from the onslaught. As a result, resource issues will intrude on international affairs in a variety of ways, in some cases producing significant discord and crisis.

The problem that confronts us at the beginning of the twenty-first century is that human consumption of all types of materials is growing at an ever-increasing rate, imposing possibly intolerable pressures on the world's existing stockpile of natural resources. Until now, humans have been able to mitigate these pressures by developing new sources of supply—for example, by digging deeper into the earth for metals and oil—and by inventing alternative materials. No doubt, human ingenuity and the power of the market will continue to generate similar solutions. At some point, however, the demand for certain commodities will simply overwhelm the

---

MICHAEL T. KLARE *is the Five College Professor of Peace and World Security Studies at Hampshire College in Amherst, Massachusetts, and author of* Resource Wars: The New Landscape of Global Conflict *(New York: Metropolitan Books, forthcoming).*

available supply, producing widespread shortages and driving up the price of what remains; in some cases it may prove impossible to develop viable substitutes. Many species of fish, for example, have been so heavily depleted that the available catch, if any, commands astronomical prices. And no substitute has yet been found for water. As resource stocks dwindle and prices rise, economic strains will emerge in many societies and the divide between those with access to vital materials and those without will grow more unsettled and could lead to outright hostilities.

Even if disputes over the distribution of resources do not result in conflict, the stresses engendered by resource pressures will affect society in a number of ways. For many countries, the tempo of economic growth will decline as domestic supplies of vital materials contract and the price of imports rises. In their rush to convert valuable resource stocks into cash, moreover, some developing countries will cause severe and costly environmental damage. And the entire planet will suffer from the by-products of unrestrained resource consumption—among them, greenhouse gas emissions, toxic wastes, and depleted soils.

Resource issues will undoubtedly figure prominently in world affairs. Just how prominent will depend on the evolution of human consumption patterns. The greater the pressure we bring to bear on the world's existing resource base, the higher the risk of major trauma. The implications of three trends in contemporary human behavior will be key: economic globalization, population growth, and rapid urbanization.

THREE TRENDS

Globalization increases the pressure on resources in several ways. Most significant is the spread of industrialization across the globe, producing a dramatic increase in the demand for energy, minerals, and other basic materials. The spurt in energy demand is especially evident in the newly industrialized countries of Asia, which are expected to continue growing at a rapid pace in the coming decades. According to the United States Department of Energy, oil consumption in these countries will double between 1997 and 2020, creating demand for an additional 4.4 billion barrels per year by the end of this period. Oil use is also rising in other developing areas, raising total world consumption by 55 percent over this same period. A similar pattern is evident with respect to natural gas and coal—both of which are slated for a major increase in consumption over the next few decades. The production of all this energy, along with the other materials required by the newly industrialized countries, will significantly increase the pressures already being placed on the global resource base.

Globalization is also contributing to the emergence of a new middle class in many parts of the world. As these newly affluent families acquire additional funds, they often try to duplicate an American-type lifestyle by acquiring more goods and appliances and by moving to larger living quarters—all of which generates a steep increase in the consumption of basic materials. Most notable, perhaps, is the growing international demand for private automobiles—a process described by the Department of Energy as the "motorization" of the world.[1] Automobile ownership in the developing areas "is expected to increase dramatically as economic growth continues and personal income rises," the agency reported in 2000. "In many urban centers, such as Bangkok, Manila, Jakarta, Shanghai, and Mumbai [formerly Bombay], car ownership is among the first symbols of emerging prosperity." By 2020, the global number of motor vehicles will grow to an estimated 1.1 billion units—or 425 million above the level for 1996. Just to produce this many vehicles will entail the consumption of vast amounts of iron, aluminum, and other commodities; once in operation, moreover, they will consume millions of gallons of oil per day, year after year.

Finally, globalization affects the global resource equation by extending the worldwide reach of multinational companies. These companies provide unprecedented economic opportunities for many poor and isolated countries, but also invite the unsustainable exploitation of these countries' natural resources and facilitate the entry of warlords, insurgent groups, and corrupt military factions into resource-related enterprises. As recently reported by the UN, some of these local actors have used their ties to multinational firms to finance the acquisition of arms and other materiel. In Liberia, for example, the former rebel leader Charles Taylor traded timber and mineral rights for the money needed to purchase weapons; in Sierra Leone, as in Angola, the rebels traded diamonds for guns. These transactions have increased the duration and severity of many internal conflicts, producing vast human suffering and placing a mammoth burden on the world's humanitarian aid organizations.

Population growth is also adding to the pressure on resource supplies. According to the World Resources Institute, the world's population will reach 8 billion people by 2025—some 2 billion more than in 2000. These 2 billion additional people will need to be fed, housed, clothed, and otherwise provided with basic necessities, producing a corresponding requirement for food, water, wood, metals, fibers, and other materials. Although the earth can supply these materials, at least in the amounts needed for a relatively modest standard of living, it cannot continue to sustain an ever-growing human population *and* satisfy the rising expectations of the world's middle and upper classes.

---

[1] See United States Department of Energy, *International Energy Outlook 2000* (Washington, D.C., 2000).

Of all basic necessities, water is the one most likely to be affected by population growth. Beyond that required for drinking, personal hygiene, and food production, water is also needed for a wide variety of industrial processes. Fortunately, the world possesses sufficient renewable supplies of fresh water to satisfy current requirements and to sustain some increase in the human population. But the pressure on many key supply sources is growing, suggesting that severe shortages will develop in some water-scarce areas over the next few decades. This is especially true in the Middle East, where fresh water is already in short supply and population growth rates are among the world's highest. Unless the existing sources of supply are used more efficiently, or the desalination of seawater proves more affordable, competition over access to water will intensify in these areas and could lead to war.

The greater the pressure we bring to bear on the world's existing resource base, the higher the risk of major trauma.

Another global trend with considerable impact on the resource equation is urbanization. Throughout the world—and especially in the developing areas—people are moving from rural areas to towns and cities in search of jobs and economic opportunities. According to the World Resources Institute, the world's urban population surged from 1.5 billion people in 1975 to 2.6 billion in 1995, and is expected to jump again to 5.1 billion by 2025. Many of these people are moving to already large cities: in 1995 an estimated 298 million people were living in the world's 25 largest cities, and, by 2015, 1.7 billion people will be living in cities of over 1 million population. This has enormous implications for global resource stocks because urban communities tend to consume more energy, water, and building materials than rural communities, and because cities also generate far more waste products than rural areas. The outward expansion of cities and suburbs is also usurping areas previously used for agriculture, thereby adding to the pressure on the world's remaining supply of arable land.

From a resource perspective, the impact of urbanization cannot always be distinguished from that of globalization and population growth. All these phenomena are adding to the worldwide demand for water, energy, and other basic resources. But the concentration of more people in large cities does have an especially pronounced impact on global water supplies because urban areas require vast quantities of water for sanitation and food preparation, and also because cities produce copious wastes that are often poured into rivers and lakes—thereby diminishing the amount of clean water available to other users. Providing adequate supplies of clean water to large urban populations will, therefore, prove to be one of the most demanding tasks facing local and national leaders in the twenty-first century.

Globalization, population growth, and urbanization will thus impose substantial and growing pressures on the world's natural resource base in future decades. When assessing the impact of the pressure these forces will have on natural resources, the impact of a fourth major trend—technology—must be considered.

TECHNOLOGY'S AMBIGUOUS IMPACT

Technology will affect the global resource equation in various ways. New technologies can expand the supply side of the equation by permitting the exploitation of materials once considered inaccessible (such as oil deposits located beneath the oceans and in remote parts of Siberia) and by reducing the cost of desalination, solar energy collection, and other innovative methods of resource creation. Technology can also help reduce demand by facilitating the more efficient use of existing materials (for example, through the introduction of fuel-efficient vehicles) and by creating new, low-resource-consuming modes of production and transportation. Many engineers have argued, for example, that the widespread use of vehicles powered by electrochemical fuel cells would greatly reduce global petroleum requirements.

But not all technological progress will result in an improved resource picture. Much of the world is still in the early stages of motorization, and the expanding ownership of gasoline-powered cars will produce a steadily increasing demand for petroleum. Air travel is expected to rise at a double-digit rate in much of the world, further adding to the demand for oil. The development of high-tech, computer-driven industries in both the developed and developing parts of the world is also generating an unanticipated surge in demand for electricity, producing periodic blackouts and brownouts in some fast-growing areas. And while the introduction of computers was said to eliminate the need for paper, the exact opposite has proved to be the case: worldwide paper consumption has soared over the past two decades, from approximately 170 million tons per year in 1980 to 298 million tons in 1997.

Calculating the net effect of technological change on the global resource equation, therefore, is impossible. While the lack of energy-saving devices arguably would increase total consumption to an even higher level than it currently is, the use of oil and other basic materials is on the rise in almost every region of the world (only in the former Soviet Union can any significant decline in consumption be detected), and it is expected to continue to rise in the future.

IMPLICATIONS FOR WORLD POLITICS

The rising worldwide demand for basic materials and the resulting pressure on global resources will have profound implications for world affairs in three basic areas: economic, environmental, and political-military.

The effects of global resource pressures have been most immediately evident in the economic area, due to the high oil prices prevailing in much of the world. Because production has not kept pace with rising demand, petroleum supplies are scarce in many regions, naturally resulting in higher prices. Fortunately, the world economy appears sufficiently buoyant to absorb some increases in energy costs, but any further increases in price, or a significant prolongation of the current situation, could suffocate the revival of economic growth in Asia and cause hardships for enterprises such as farming, trucking, and air transportation in other parts of the world.

If past experience is any guide, the current upturn in oil prices will stimulate further exploration and production initiatives by the energy companies, leading to a future increase in available supplies. The exploitation of new fields in offshore Africa and in the Caspian Sea area, for example, will add billions of barrels to proven reserves. But if global energy consumption continues to rise at the brisk tempo anticipated by the United States Department of Energy, demand will periodically outstrip supply, producing recurring price increases and, in some cases, recession. At some point, moreover, the oil industry's ability to satisfy ever-increasing demand will collide with the reality of finite supply—the earth contains only so much conventional (that is, liquid) petroleum, and much of this will have been consumed by the middle of the twenty-first century. Unless we begin to reorient our economy and transportation systems away from their current oil dependency, we can expect energy shocks of increasing severity in the decades ahead.

The environmental consequences of accelerated resource consumption will be no less marked than the economic ones. Most significant will be the rising concentration of carbon dioxide and other heat-trapping "greenhouse" gases in the atmosphere. With the expected increase in global motorization, expanded oil and coal use by the developing countries, and the burning of forests for agricultural purposes, worldwide emissions of carbon dioxide are predicted by the United States Department of Energy to rise by 62 percent between 1997 and 2020, from 6,175 million to 10,009 million metric tons per year. Thus any hopes of reducing greenhouses gases in accordance with the 1993 United Nations Framework Convention on Climate Control are sure to be disappointed. No matter how determined the efforts of environmental activists and their diplomatic allies, the world will not be able to reverse the trend toward rising annual temperatures unless humans manage to reduce their consumption of fossil fuels and stop the burning of forests.

Any effort to reduce global emissions, moreover, will provoke sharp disagreement among various groups of countries over the relative consumption of resources. At present, the United States is the world's largest producer of carbon emissions (24 percent of the 1997 global total), mainly because of its heavy reliance on gasoline-powered automobiles. This has led many environmentalists, both at home and abroad, to call on the United States to take the lead in reducing carbon emissions. The Clinton administration agreed in 1997 to pursue such a policy by signing the Kyoto Protocol, which requires the older industrialized nations to reduce their carbon emissions by approximately 5 percent below their 1990 levels by 2012. Over the next 20 years, however, China is expected to overtake the United States as the world's leading carbon emitter (even if the United States does not abide by the Kyoto Protocol), largely as a result of its growing reliance on coal as a source of energy. Beijing has resisted pressure from the international community to reduce its carbon emissions and has shown little interest in accepting the terms of the Kyoto Protocol. Hence, we can expect increased international friction between those countries that take meaningful—and possibly painful—steps to cut their emissions, and those that blatantly refuse to do so.

International discord can also be expected in the case of other resource-related environmental problems, such as fisheries depletion and deforestation. Indeed, disputes over international fishing restrictions have already become a source of contention between countries with major fishing industries. In July 1997, for example, Canadian fishers blockaded an Alaskan state ferry, the *Malaspina*, to protest salmon overfishing in American waters; Canadian gunboats have also fired on Spanish vessels accused of poaching from Canada's Atlantic fishing zone. Similar disputes have arisen in waters off Iceland and Norway, and in other areas where governments have attempted to exclude foreign fishing boats from their territorial waters. A somewhat analogous situation has arisen in negotiations over forestry protection, with major timber-exporting states such as Indonesia and Brazil resisting efforts by other countries to impose restrictions on their tree-cutting activities.

The third area of world affairs that will be affected by resource pressures is the political-military. In some instances disputes over access to vital materials will become so severe that they will inflame political relations between countries and result in war. This is most likely to occur in the case of materials that are considered essential to national security or to the economic survival of the state: oil for major industrial powers, water for agriculturally oriented states. Struggles over access to these materials have led to violence periodically, and may well do so again in the future. The United States, for example, has made it clear that it will oppose any move by Iraq or Iran to impede the free flow of oil from the Persian Gulf—a precept put to the test during the 1991 Persian Gulf War. To prevent any future threat to Western oil supplies, the United States has steadily expanded its military presence in the gulf area; as part of this effort, Washington arranged for the refueling of United States warships in the Yemeni port of Aden, thus setting the stage for the October 2000 bombing of the *USS Cole*.

Oil is also a factor in several border disputes (notably in the Arabian Peninsula area) and in a growing number of conflicts over the ownership of offshore economic zones in energy-producing areas. For example, a dispute has arisen among the states bordering the Caspian Sea, pitting Russia against several former republics of the Soviet Union: Azerbaijan, Kazakhstan, and Turkmenistan. Although no shots have yet been fired in this contest, Moscow has been accused of meddling in the internal affairs of its neighbors. Another dispute over potential oil reserves in the South China Sea has led to naval clashes between China and members of the Association of Southeast Asian Nations (ASEAN). Most of these contests will, in the end, be resolved by peaceful means, but the risk of violence will persist as long as the governments involved believe that vital interests are at stake.

The risk of violence over the allocation of shared water supplies is especially acute where fresh water is scarce, particularly where major river systems constitute the main source of water for two or more countries. The Nile, for example, is the main source of water for Egypt and Sudan, and a significant source for several other states; the Jordan River is vital to Israel and Jordan, while the Tigris-Euphrates system is a major source for Iraq, Syria, and Turkey. Because these states have failed to agree on the manner in which the flow of these rivers is to be divided among them, discord can arise whenever one country in a system appropriates more water than what others consider its fair share. That these countries often disagree on other matters only adds to the danger that disputes over water supplies will lead to conflict.

RETHINKING WORLD POLITICS

As even this short survey indicates, resource issues will likely affect world affairs significantly in the years ahead. This impact may not always take the form of discord and conflict, but will certainly demand growing attention from policymakers. Whether in the economic, environmental, or political-military arena, resource concerns are certain to rise on the international policy agenda.

Unfortunately, these issues have not received the scrutiny they deserve from analysts and scholars. Although resource concerns once figured prominently in the study of international relations, they lost their cardinal status during the cold war era, when military and ideological considerations occupied center stage. Despite the cold war's demise, the analytical perspectives of that era continue to dominate the discussion of world politics. If we are to better grasp the dynamics of international affairs, we must pay greater heed to the long-term consequences of placing ever-increasing pressure on the world's natural resource base. ■